Available online at www.scholarsresearchlibrary.com

Scholars Research Library

Scholars Research Library

European Journal of Zoological Research, 2014, 3 (1):123-126
(http://scholarsresearchlibrary.com/archive.html)

ISSN: 2278–7356

Prevalence of bovine fasciolosis in Gilan province, north of Iran

Garedaghi Yagoob[1*] and Faal Kheshtmasjedi Naem[2]

[1]*Department of Veterinary Parasitology, Tabriz Branch, Islamic Azad University, Tabriz, Iran*
[2]*Faculty of Veterinary Medicine, Tabriz branch, Islamic Azad University, Tabriz, Iran*

ABSTRACT

Fasciolosis is a well known parasitic disease of animals with public health importance. In Rasht and Bandar-Anzali, in Gilan Province, where experienced two large human fasciolosis outbreaks, no update information is available on animal fasciolosis. Paucity of information on animal fasciolosis in these regions and its possible impacts on human fasciolosis called us for carrying out this study. During 2013, coprologic surveys using flotation method were applied to fecal samples of 450 stray cattle and 10 samples from 10 different preserved animal manure collections to detect Fasciola egg. Fecal samples of 35.5% of cattle and 100% of animal manure samples, harbored Fasciola egg. The mean intensity of Fasciola egg per gram of feces (EPG) was low (0-16). Fasciolosis was very prevalent among cattles in studied regions. Because sheep breeding is not a common practice in Rasht and Bandar -Anzali and horse population is low, cattle and to a lesser extent buffalo were the predominant reservoir hosts of infection. Regular treatment of all animals with an effective flukicide and sanitation of animal manure through its preservation for two month should be applied in order to reduce the level of infection in animals, water, wild and cultivated vegetables and consequently human beings.

Keywords: Bovine, Fasciolosis, Gilan province, Iran.

INTRODUCTION

Fasciolosis is a well known parasitic disease, because of its veterinary importance. It is now also an important human parasitic disease with estimated ranging from 2.4 to 17 million people infected (1). Recently worldwide losses in animal productivity due to fasciolosis were conservatively estimated at over US$ 3.2 billion per annum (2). *Fasciola hepatica* and *F. gigantica* the causative agents of fasciolosis of animals and man are reported from different regions in Iran (3-6), although the distribution of both species overlaps in many parts of the country (4, 7, 8). In general the distribution of Fasciolosis is worldwide. However, the distribution of F.hapatica is limited to temperate areas and high lands of tropical and subtropical regions (5). The definitive hosts for F. hepatica are most mammals, among which sheep and cattle are the most important once. The geographical distribution of trematodes species is depending on the distribution of suitable species of snails. The genus Lymnea in general and L. Truncatula in particular are the most common intermediate host for F. hepatica. This species of snail was reported to have a worldwide distribution (9). F. gigantica is found in most continents, primarily in tropical regions (10).

Diagnosis is based primarily on clinical signs and seasonal occurrence in endemic areas but previous history of fasciolosis on the farm or identification of snail habitats; postmortem examinations, haematological tests and examination of faeces for fluke eggs are useful. Coprological analysis is still commonly employed to diagnose bovine fasciolosis, despite the fact that eggs cannot be detected until the latent period of infections, when much of

liver damage has already occurred (4). Even though, it is impossible to detect fasciola in live animals, liver examination at slaughter or Necropsy was found to be the most direct, reliable, and cost effective technique for diagnosis of fasciolosis (12). In Asia the most human cases were reported from Iran, mainly from Gilan Province (5), where one report exists only on animal fasciolosis (9). Paucity of information on animal fasciolosis in Rasht and Bandar-Anzali and its possible impacts on human fasciolosis calls us for carrying out this study.

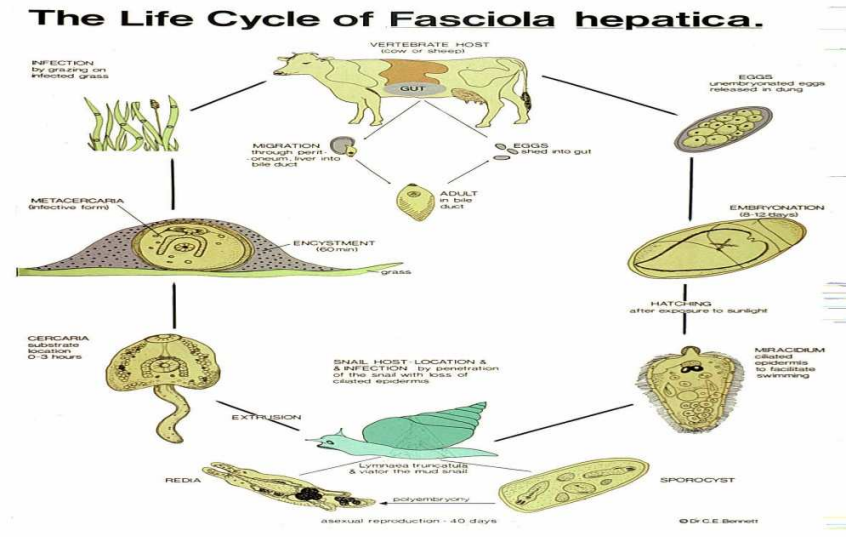

Figure 1- Life cycle of *Fasciola hepatica* in cattle

MATERIALS AND METHODS

Description of the study area:
Rasht the provincial capital located at the central plain of Gilan Province eight meters above the sea level and Bandar-Anzali 40 km far from Rash both enjoy moderate weather with considerable rainfall (1500mm and 1951mm respectively).

Study population and study design:
In A cross- sectional type of study during 2013, coproscopic analyses on 450 cattle samples and 10 manure samples taken from 10 different freshly preserved animal manure collections were carried out for detection of *Fasciola* egg , were included in this study.

Coprological examination:
Fecal sample were collected directly from rectum of animals. The feces are collected by hands protected by rubber gloves, using two fingers i.e. (middle and index fingers). The samples were taken to the laboratory in tightly closed universal bottles and examined for fasciola species of eggs by method described by Antonia et al (2002). Flotation method using a mixture of saturated zinc and sodium chloride solution (SG. 1.52) and a clayton-lane centrifuge were used for determination the number of egg per gram of feces (EPG).

Data management and analysis:
The data were recorded on specially designed forms and preliminary analysis was done in Microsoft® Excel (2003). The outcome variables were the cases of fasciolosis detected fecal examination of Fasciola spp. eggs. In all cases, the SPSS version 16 was used. Prevalence of fasciolosis was calculated as the number of cattle found to be infected with fasciola, expressed as a percentage of the total number of cattle. The monetary significance of the problem was analysed based on the information obtained during interview and calculated on daily and annual basis.

RESULTS

The results from coproscopic analyses are shown in Table 1 . Evidence from Table 1 indicates that due to uncommon practice of sheep breeding and low population of horse in studied areas, the predominant animal reservoirs are cattle and to a lesser extent buffalo. On the other hand high infection of animals and animal manure with *Fasciola* eggs and preservation of the latter for fertilizing farm land could play a critical role in environmental contamination and spreading fasciolosis in animals and human beings.

Table 1: Prevalence of *Fasciola* in animals and manure in Rash and Bandar-Anzali

Source	No. examined	EPG		
		%Infection	Mean	Range
Cattle	450	35.5	9.4	1-6
Manure	10	100	13	1-42

A total of 450 adult indigenous cattle were examined by taking faecal samples to laboratory in tightly closed universal bottles and examined for fasciola eggs. From 450 cattle, 160 (35.5%) were positives for fasciolosis (Table 2).

Table 2: Prevalence of bovine fasciolosis based on faecal sample in Rash and Bandar-Anzali

Month	Oct.	Nov.	Dec.	Jan.	Feb.	Total
No. of faecal sample examined	80	110	90	50	120	450
No. of positives for fasciolosis	11	24	56	32	37	160
Perevalence %	13.75	21.8	62.2	64	30.8	35.5

DISCUSSION

Our findings showed that fasciolosis is very prevalent among animals in Rasht and Bandar- Anzali. Considering the prepatent period of fasciolosis (12 wk), the absence of *Fasciola* egg in calf is a natural phenomena. But the percentage of infection in animal manure was higher than 21, 5% previously reported from ruminants of Gilan (9). Because sheep breeding is not a common practice in Rasht and Bandar- Anzali and horse population is low, the predominant animal reservoirs were stray cattle regarding its population (675000) and high prevalence of infection (35.5%) and to a lesser extent buffalo. In Mazandaran Province, neighboringGilan with rather similar climatic conditions and animal husbandry management, 7.3% of sheep and 25.4% of cattle were found to be infected with *Fasciola* egg (10), a finding partly in harmony with our results. Accordingly our results are in consonant with prevalence rate of liver fluke in Khuzestan ruminants except that of buffalo (82%) (7). Fasciolosis may causes serious economic problem. Recently worldwide losses in animal productivity due to fasciolosis were conservatively estimated at over US$ 3.2 billion per annum (2). However it is asymptomatic in most cases, but has substantial effects on milk production and a reduction in food conversion efficiency with reduced weight gain (11). Therefore preventive regular treatments of all animals with an effective flukicide will reduce the prevalenceof adult fluke and consequently environmental contamination with *Fasciola* eggs. According to Mas-Coma et al. (1) metacercarial infectivity is independent from the animal reservoir sources, demonstrating that fluke from secondary reservoir hosts such as pig and equines involved the same potential risk as those from main reservoirs as sheep and cattle. Therefore in addition to horse, infection of wild boars of Gilan with *F. gigantica* (12) can play a local and minor role in spreading fasciolosis in animals and man.

Fasciolosis is a major plant born disease. In Iranian province of Gilan including Rasht and Bandar- Anzali several very popular kinds of wild plants such as of *Mentha pulegium* and *Mentha pipertia* are eaten raw, in some popular local dishes, such as olive past (local name *Zeitoon parvardeh*). Human infection in Rasht and Bandar-Anzali (8), Kermanshah (13) and Egypt (14) was related to consumption of local green aquatic vegetables.In developed countries animal manure is considered as a waste, but in many developing countries including Iran, animal manure is a valuable medium for fertilizing farm lands. Therefore for its sanitation different methods such as: storage of manure for two months, anaerobic digestion, aerobic digestion, high temperature drying, electrochemical method, sound waves and ultraviolet or radioactive waves are suggested (15). Thermal processing (pasteurization) at 70 °C for 30-60 min is used in some European countries such as Germany and Switzerland for liquid manures used as fertilization grassland during summer months (15,16).Among other things, it seems likely that under actual condition in Iran, the storage of animal manure for two month secures the inactivation of all parasites. Therefore in

contrast to Mas-Coma et al. (17) who believe high prevalence of *Fasciola*in humans does not seem to be related to high prevalence in livestock, the results of the present study show that such a relation could be responsible for the high prevalence of human fasciolosis in Rasht and Bandar-Anzali, where experienced twomajor human outbreaks during 1989 and 1999. Therefore controlling fasciolosis in animals and human beings andmaintenance of food safety consumed by man, measures recommended are the same as applied for veterinary fasciolosis (18,19,20) and communities in epidemic areas should be appropriately informed about the disease, its transmission and sanitation of farm animal manure.

CONCLUSION

In present study a very prevalent of bovine fasciolosis was obtained when compared with prevalence reported by different researchers at different area. In general it can be concluded that fasciolosis is one of major problem for livestock development in the study area by inflicting direct economic losses and its occurrence is closely linked to the presence of biotypes suitable to the development of snail intermediate host. So as to reduce these losses, strategic anthelementics treatment with appropriate fluckicide drug should be practiced and a combination of control measures include drainage, fencing and molluscides have to be used to ensure a satisfactory degree of control in the long run.

Acknowledgements
The authors would like to thanks Tabriz Branch, Islamic Azad University for the financial supports of this research, which is based on a research project contract**.**The authors declare that they have no conflicts of interest.

REFERENCES

[1] S. Mas-Coma , MD. Bargues , MA. Valero , *Inter J Parasitol*, **2005** , 35, 2 , 1255-1278.
[2] TW. Spithill , PM. Smooker , DB. Copeman , *Ed. JP Dalton. CABI Publishing, 1st ed. Oxon, Wallingford, UK*,**1999**, 465-525.
[3] K. Ashrafi, MA. Valero, J. Massoud, A. Sobhani, SH. Soleymani-Mohammadi, P. Conde, M. khoubban, M. Dolores-Bargues, S. Mas- Coma , *American J Trop Med Hyg*,**2006**, 75,2, 296-302.
[4] A. Eslami , 4th ed. Tehran niversity Press. Tehran, **2005**, 153-174.
[5] S. Mas-Coma , MD. Bargues , JG. Esteban, Ed. JP Dalton. CABI Publishing; 1st ed. Oxon, Wallingford, UK, **1999**, 411-434.
[6] MH. Movassaghi-Ghazvini, MR. Valilou, AR. Ahmadzadeh ,AR. Karimi, K. Zirak , *Turk J Vet Anim Sci*, **2008**, 32,4, 305- 7.
[7] GH. Sahba, F.Arfaa, I. Farahmandian, H. Jalali , *J Parasitol*,**1972,** 4, 712-16.
[8] K. Ashrafi, J. Massoud, K. Holakouei, M. Mahmoodi, MA. Joafshani, MA. Valero, MV. Fuentes,M. Khoubban, P. Artigas, MD. Bargues, S. Mas-Coma , *Iranian J Pub Health*, **2004**,33(4): 33-7.
[9] RD. Sabokbar, *J Sch Med Tehran Univ*,**1960**, 17, 251-260.
[10] AS. Moghadam,J. Massoud, M. Mahmoudi, AH. Mahvi, MV. Periago, P. Artigas, MV. Fuentes, MD. Bargues, S. Mas-Coma , *Parasitol Res*, **2004**,94: 61-69.
[11] J. Vercruysse, H. Taraschewski, J. Voigt , *Parasitology in Focus*. Ed, H Mehlhorn: Springer-Verlag; 1st ed. Berlin,**1988**, p. 494.
[12] A. Eslami, S. Farsad-Hamdi , *J Wildl Dis*,**1992**, 28(2): 318-19.
[13] H. Hatami, M. Asmar, J. Massoud, S. Aryanifar, S. Mansori, F. Fatemi, A. Shahrezaei, R. Rezaei, H. Namdaritabar, *Moddares J*, **2000**, 3, 79-87.
[14] JG.Esteban, C. Gonzalez, F. Curtale, C. Munoz- Antoli, MA. Valero, MD. Bargues, M. El Seyed, El Wakeel AAW, Y. Abdol- Wahab, A. Montresor,D. Engels, L. Savioli, S. Mas- Coma , *Am J Trop Med Hyg*, **2003**, 69 ,4, 429-37.
[15] G. Theodoropoulos , *J Hellenic Vet Med Soc*,**2003**, 54, 2, 146-53.
[16] A. Eslami, SH. Hosseini, B. Meshgi , *Iranian J Publ Health*, **2009**, 38 ,4, 132-135.
[17] S. Mas-Coma, MD. Bargues , *Res Rev Parasitol*,**1977**, 57, 145-218.
[18] P. Torgerson, J. Claxton , Ed. JP Dalton.: CABI Publishing, 1st ed. Oxon, Wallingford, UK, **1999**, 113-149.
[19] M.A. Morales, J. Luengo & J. Vásquez , *Parasitol*,**2000**, *24*, 115-118.
[20] A. Barrera , University of Católica de Temuco. Veterinary medicine school. Temuco, Chile, **2004** ,3 , 347-356.